



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/805,142

03/19/2004

John H. Rosenfeld

022232-9074-01

8625

23409 7590 10/01/2009
MICHAEL BEST & FRIEDRICH LLP
100 E WISCONSIN AVENUE
Suite 3300
MILWAUKEE, WI 53202

EXAMINER

DUONG, THO V

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

10/01/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/805,142	Applicant(s) ROSENFELD ET AL.	
	Examiner Tho v. Duong	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 8-14 and 16-19 is/are rejected.
- 7) ☒ Claim(s) 4, 6, 7, 15 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/13/09 has been entered.

Response to Arguments

Applicant's arguments filed 7/13/09 have been fully considered but they are not persuasive.

Applicant's argument that Chu fails to disclose a capillary wick and Khrustaleve fails to disclose the evaporator has a height in a direction of gravity significantly greater than a width and liquid flow through the wick from the inlet to the outlet of the evaporator is substantially vertical, has been very carefully considered but is not found to be persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, reference of Chu substantially discloses all of applicant's claimed invention and reference to Khrustalev is relied to teach the use of capillary wick lining the entire evaporator for assisting the flow of fluid from the inlet to the outlet, wherein the wick is capable of wicking the fluid in any direction, which includes the vertical direction.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3,5,11-12 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (US 6,223,810) in view of Khrustaleve et al. (US 6,536,510). Chu discloses (figures 1 and 2) a thermosiphon apparatus comprising at least one evaporator (20) connected by a vapor line (40) to a condenser, the vapor line (40) comprising a tube having a first end connected to the evaporator (20) and a second end connected to the condenser; a liquid line (50) connecting the condenser (30) and the evaporator (20); the liquid line comprising a tube having a first end connected to the condenser (30) and a second end connected to the evaporator (20); the evaporator has a height in a direction of gravity significantly greater than a width perpendicular to the height, and is positioned in the direction of gravity from the condenser such that the condenser supplies liquid under gravity induced pressure to the evaporator; a vertical vapor collection cavity is connected to the vapor line (50); and a liquid line irrigator (21) connected to the liquid. Chu does not disclose that the evaporator has a vertical capillary wick of porous sintered material on a sheet of conducting material; a first manifold having multiple outlets connected vapor line, a second manifold having multiple outlets connected the liquid line; and a multiple evaporators are interconnected along their bottoms. Khrustalev discloses (figures 2-7

Art Unit: 3744

and 19) a capillary assisted loop thermosiphon apparatus comprising a plurality of evaporators (30) connected by a vapor line (32) to a condenser (70); a liquid line (34) connecting the condenser and the evaporators; the evaporators (30) is in the direction of gravity from the condenser such that the condenser supplies liquid under gravity induced pressure to the evaporators, and the evaporators have a vertical capillary porous sintered wick (64) which is capable of wicking in any direction including the vertical direction or the direction of gravity; the wick (64) extends vertically against a heat absorbing sheet (42) on the evaporator; and a vapor collection cavity extends vertically along the wick; the vapor collection cavity being connected to the vapor line; the multiple evaporators are interconnected along their bottom to share a common liquid reservoir (31); a liquid line irrigator (54) connected to the liquid line supplies liquid under gravity to the wick; the vapor line (32) connects to a first manifold having multiple outlets for connecting respective vapor lines of the multiple evaporators; the liquid line connects to a second group manifold having multiple outlets for connecting respective liquid line (34); and the respective liquid line irrigators distribute liquid to the respective wicks (64) of the multiple evaporators. The lining of capillary wick on the interior surface of the evaporator of the thermosiphon device is for a purpose of assisting the recirculation of the liquid from the condenser to the evaporator so that heat transfer performance of the apparatus is enhanced. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Khrustalev's teaching in Chu's device for a purpose of assisting the recirculation of the liquid from the condenser to the evaporator so that the heat transfer performance of the apparatus is enhanced.

Art Unit: 3744

Claims 8,9 10,13,14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu and Khrustalev as applied to claim 1 above, and further in view of Marcus et al. (US 4,046,190). Chu and Khrustalev substantially disclose all of applicant's claimed invention as discussed above except for the limitation that a plurality of reinforcing rod disposed between two sheets of the evaporator. Marcus discloses (figure) a flat heat pipe having a flat evaporator wherein a plurality of rods (4,6 and 7) disposed between two wick layers on two opposite sheets (2,3) for a purpose of forming a vapor cavity between the sheets and preventing the sheets from collapsing. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Marcus's teaching in the combination device of Chu and Khrustalev for a purpose of forming a vapor cavity between the sheets and preventing the sheets from collapsing.

Allowable Subject Matter

Claims 4,6,7,15 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tyler J. Cheryl can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tho v Duong/
Primary Examiner, Art Unit 3744